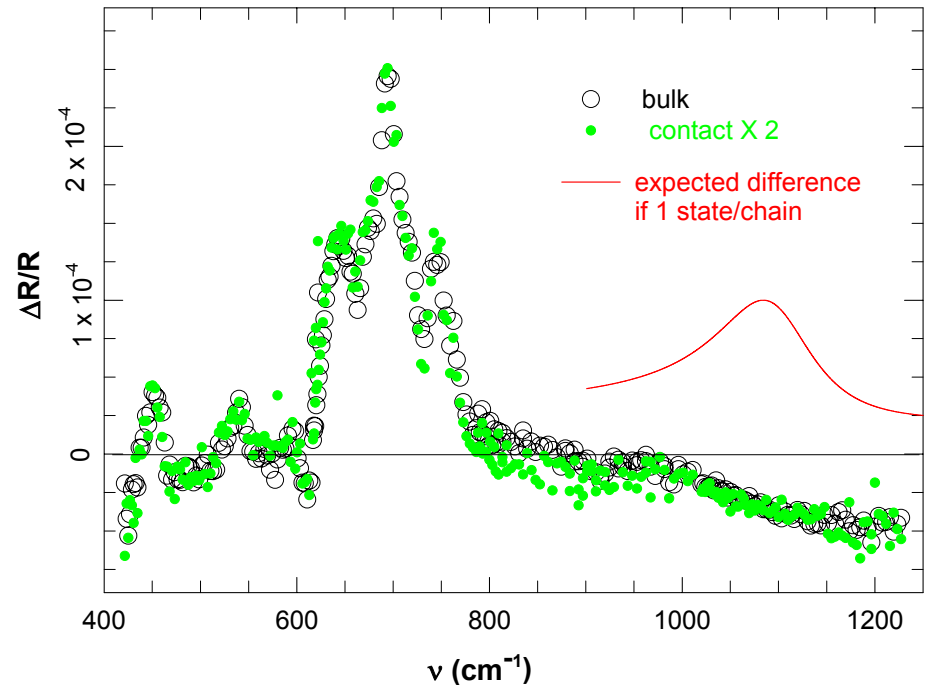


# The Electro-Optic Effect in Charge-Density-Wave Conductors

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One-dimensional charge-density-wave (CDW) conductors exhibit an electro-optic response which, while small, is unique in its spatial dependence and wide infrared spectral range.

One interesting aspect of the spatial dependence is that it might reveal the presence of long theorized soliton-like states expected to occur near current contacts when the CDW slides. The graphs shows the relative change in reflectance at two positions in a crystal of “blue bronze” for a sliding CDW. The spectra are identical, suggesting that if soliton states occur, they only exist on < 15% of the conducting chains at any time.



# Electro-optics lab at the University of Kentucky

These experiments are being done with tunable infrared diode lasers not conventionally used for solid state spectroscopy. An infrared microscope is used to focus and position the laser light.

New experiments at the Berkeley Advanced Light Source, in collaboration with Michael Martin's group, will use synchrotron radiation to improve the sensitivity of the measurements.

